

What is claimed is:

1. A throw-away tip of substantially flat plate shape comprising two principal surfaces, that provide rake faces and seating surfaces, and side surfaces that provide relief
5 faces, with cutting edges formed on the intersects of the principal surfaces and the relief faces so that the throw-away tip can be used on both sides,

wherein each of said principal surfaces comprises a land surface provided along the periphery thereof, a central surface provided on the inside of said land surface, a recess interposed between the land surface and the central surface, and at least one protrusion that
10 extends from the central surface toward said land surface; and at least the top surface of said protrusion and said land surface serve as the contact surface when said throw-away tip is attached to a tool holder.

2. The throw-away tip according to claim 1, wherein the top surface of said protrusion and said land surface have the same height.

15 3. The throw-away tip according to claim 1, wherein the top surface of said protrusion is acute-angled at the distal end thereof.

4. The throw-away tip according to claim 1, wherein one of said protrusions extends toward a corner of said throw-away tip and one or more other protrusion extends midway between two corners.

20 5. The throw-away tip according to claim 1, wherein the ratio (L_2/L_1) of the distance L_2 from the center of said throw-away tip to the distal end of said protrusion to the distance L_1 from the center of said throw-away tip to the periphery of the throw-away tip is in a range from 0.7 to 0.95.

25 6. The throw-away tip according to claim 1, wherein width of said land surface is in a range from 0.2 to 0.5 mm.

7. The throw-away tip according to claim 1, wherein said recess consists of three curved surfaces: a curved surface (R_1) located on the side of said land surface, a curved surface (R_2) that continues to said curved surface R_1 and a curved surface (R_3) that continues to said curved surface R_2 and is located on the central surface side.

5 8. The throw-away tip according to claim 1, wherein the ratio of areas of said central surface and said land surface in said principal surface is in a range from 50 to 90%.

9. The throw-away tip according to claim 1, wherein the distance between the distal end of said protrusion, that is located at the same height as said central surface, and said land surface is 0.5 mm or less and height of the distal end of said protrusion decreases
10 by an angle in a range from 10 to 60° toward said land surface.

10. The throw-away tip according to claim 1, which has a linkage portion that connects at least one of said protrusions and the side edge of said land surface.

11. The throw-away tip according to claim 10, wherein a length a of one side edge of said principal surface and a distance c between a corner having an angle of 90° or less
15 and said linkage portion satisfy a relationship: $0.25a \leq c \leq 0.75a$.

12. The throw-away tip according to claim 10, wherein said principal surface has diamond shape.

13. The throw-away tip according to claim 10, wherein a length a of one side edge of said principal surface and a width d of said linkage portion satisfy a relationship: 0.5
20 mm $\leq d \leq (a/3)$.

14. A throw-away tip of substantially flat plate shape, comprising two principal surfaces, that provide rake faces and seating surfaces, and side surfaces that provide relief faces, with at least the corner portions of the intersects of the principal surfaces and the relief faces are used as cutting edges such that the throw-away tip can be used on both
25 sides,

wherein each of said principal surfaces comprises a land surface provided at least along the periphery thereof that forms said cutting edge, a central surface provided on the inside of said land surface, and a recess interposed between the land surface and the central surface;

5 when one of said principal surfaces is the seating surface, both the central surface and the land surface of this principal surface serve as the contact surface; and

 said recess that continues from said land surface in said corner portion is dimensioned in a range from 0.1 mm to 0.6 mm in recess depth (h_1), from 0.7 mm to 2 mm in recess width (w), from 0.3 mm to 1.5 mm in width (w_1) from the land surface side to the
10 bottom of the recess, and from 0.5 mm to 1.7 mm in width (w_2) from the bottom of said recess to said central surface.

 15. The throw-away tip according to claim 14, wherein said recess that continues from said land surface in said corner portion comprises three curves; a first curve (10'') having radius of curvature (r_1) in a range from 12 mm to 18 mm, a second curve (11'')
15 having radius of curvature (r_2) in a range from 0.1 mm to 0.6 mm and a third curve (12'') having radius of curvature (r_3) not smaller than 50 mm, that are connected smoothly in this order from said land surface side.

 16. The throw-away tip according to claim 14, wherein a linkage portion is provided that connects said land surface and said central surface at a position of the
20 periphery of said principal surface which is not used as a cutting edge, thereby providing a contact surface.

 17. The throw-away tip according to claim 14, wherein at least one protrusion that extends toward said land surface is provided on said central surface.

 18. The throw-away tip according to claim 17, wherein said protrusion is formed
25 to have a sharp point.

19. The throw-away tip according to claim 17, wherein one of said protrusions extends toward said corner portion.

20. The throw-away tip according to any one of claims 4 through 6, wherein both sides of said protrusion have such a configuration as to slope downward and then rise
5 toward said land surface.

21. The throw-away tip according to claim 14, wherein a ratio (L_2/L_1) of the distance L_2 from the center of said throw-away tip to the distal end of said protrusion to the distance L_1 from the center of said throw-away tip to the periphery of the throw-away tip is in a range from 0.7 to 0.95.

10 22. The throw-away tip according to claim 14, wherein a ratio of areas of said central surface and said land surface in said principal surface is in a range from 50 to 90%.

23. The throw-away tip according to claim 14, wherein a width of said land surface is in a range from 0.2 to 0.5 mm.